by Schneider Electric

INSTALLATION

IS90 Series Camclosure®

Indoor Integrated Camera System

C3425M-E (1/09)

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Regulatory Notices

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

RADIO AND TELEVISION INTERFERENCE

This equipment has been tested and found to comply with the limits of a Class B digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However there is no guarantee that the interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

You may also find helpful the following booklet, prepared by the FCC: "How to Identify and Resolve Radio-TV Interference Problems." This booklet is available from the U.S. Government Printing Office, Washington D.C. 20402.

Changes and Modifications not expressly approved by the manufacturer or registrant of this equipment can void your authority to operate this equipment under Federal Communications Commission's rules.

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

WARNING: This product is sensitive to Electrostatic Discharge (ESD). To avoid ESD damage to this product, use ESD safe practices during installation. Before touching, adjusting or handling this product, correctly attach an ESD wrist strap to your wrist and appropriately discharge your body and tools. For more information about ESD control and safe handling practices of electronics, please refer to ANSI/ESD S20.20-1999 or contact the Electrostatic Discharge Association (www.esda.org).

Green The materials used in the manufacture of this document and its components are compliant to the requirements of Directive 2002/95/EC.

This equipment contains electrical or electronic components that must be recycled properly to comply with Directive 2002/96/EC of the European Union regarding the disposal of waste electrical and electronic equipment (WEEE). Contact your local dealer for procedures for recycling this equipment.

Description

The IS90 Series Camclosure® integrated camera system combines a camera and lens package in a small, discreet dome. The system is easy to install and can be mounted to the surface of a ceiling/wall or recessed in a ceiling/wall. The unit supports both BNC and unshielded twisted pair (UTP) video wiring.

Before installing your new system, thoroughly familiarize yourself with the information in this manual.

MODELS

Indoor dome, surface/flush mount, smoked and clear bubble, white finish

Camera Type	Lens/Iris	NTSC	PAL
Color, Wide Dynamic Range, Day/Night	3.0 to 9.5 mm, Day/Night Varifocal, Auto Iris	IS90-DWV9	
	9.0 to 22.0 mm, Day/Night Varifocal, Auto Iris	IS90-DWV22	
Color, High Resolution, Day/Night	3.0 to 9.5 mm, Day/Night Varifocal, Auto Iris	IS90-DNV9	IS90-DNV9X
	9.0 to 22.0 mm, Day/Night Varifocal, Auto Iris	IS90-DNV22	IS90-DNV22X
Color, Wide Dynamic Range	3.0 to 9.5 mm, Varifocal, Auto Iris	IS90-CWV9	
	9.0 to 22.0 mm, Varifocal, Auto Iris	IS90-CWV22	
Color, High Resolution	3.0 to 9.5 mm, Varifocal, Auto Iris 9.0 to 22.0 mm, Varifocal, Auto Iris 3.0 mm, Fixed, Manual Iris 3.6 mm, Fixed, Manual Iris 6.0 mm, Fixed, Manual Iris 8.0 mm, Fixed, Manual Iris 12.0 mm, Fixed, Manual Iris	IS90-CHV9 IS90-CHV22 IS90-CH3 IS90-CH3.6 IS90-CH6 IS90-CH8 IS90-CH12	IS90-CHV9X IS90-CHV22X IS90-CH3X IS90-CH3.6X IS90-CH6X IS90-CH8X IS90-CH12X

Indoor dome, surface/flush mount, smoked and clear bubble, black finish

Camera Type	Lens/Iris	NTSC	PAL
Color, Wide Dynamic Range, Day/Night	3.0 to 9.5 mm, Day/Night Varifocal, Auto Iris	IS90B-DWV9	
	9.0 to 22.0 mm, Day/Night Varifocal, Auto Iris	IS90B-DWV22	
Color, High Resolution, Day/Night	3.0 to 9.5 mm, Day/Night Varifocal, Auto Iris	IS90B-DNV9	IS90B-DNV9X
	9.0 to 22.0 mm, Day/Night Varifocal, Auto Iris	IS90B-DNV22	IS90B-DNV22X
Color, Wide Dynamic Range	3.0 to 9.5 mm, Varifocal, Auto Iris	IS90B-CWV9	
	9.0 to 22.0 mm, Varifocal, Auto Iris	IS90B-CWV22	
Color, High Resolution	3.0 to 9.5 mm, Varifocal, Auto Iris 9.0 to 22.0 mm, Varifocal, Auto Iris 3.0 mm, Fixed, Manual Iris 3.6 mm, Fixed, Manual Iris 6.0 mm, Fixed, Manual Iris 8.0 mm, Fixed, Manual Iris 12.0 mm, Fixed, Manual Iris	IS90B-CHV9 IS90B-CHV22 IS90B-CH3 IS90B-CH3.6 IS90B-CH6 IS90B-CH8 IS90B-CH12	IS90B-CHV9X IS90B-CHV22X IS90B-CH3X IS90B-CH3.6X IS90B-CH6X IS90B-CH8X IS90B-CH12X

PARTS LIST

Qty	Description
1	Assembled IS90 Series Camclosure integrated camera system (back box, smoked bubble, and camera module)
1	Clear bubble with liner
1	Adapter plate
2	Screws, 8-32 x 1.00-inch, Phillips pan head
2	Screws, 8-32 x 0.75-inch, Phillips pan head, self-tapping
2	Screws, 8-32 x 2.50-inch, Phillips pan head, self-tapping
2	Screws, 10-32 x 1.50-inch, Phillips pan head, self-tapping

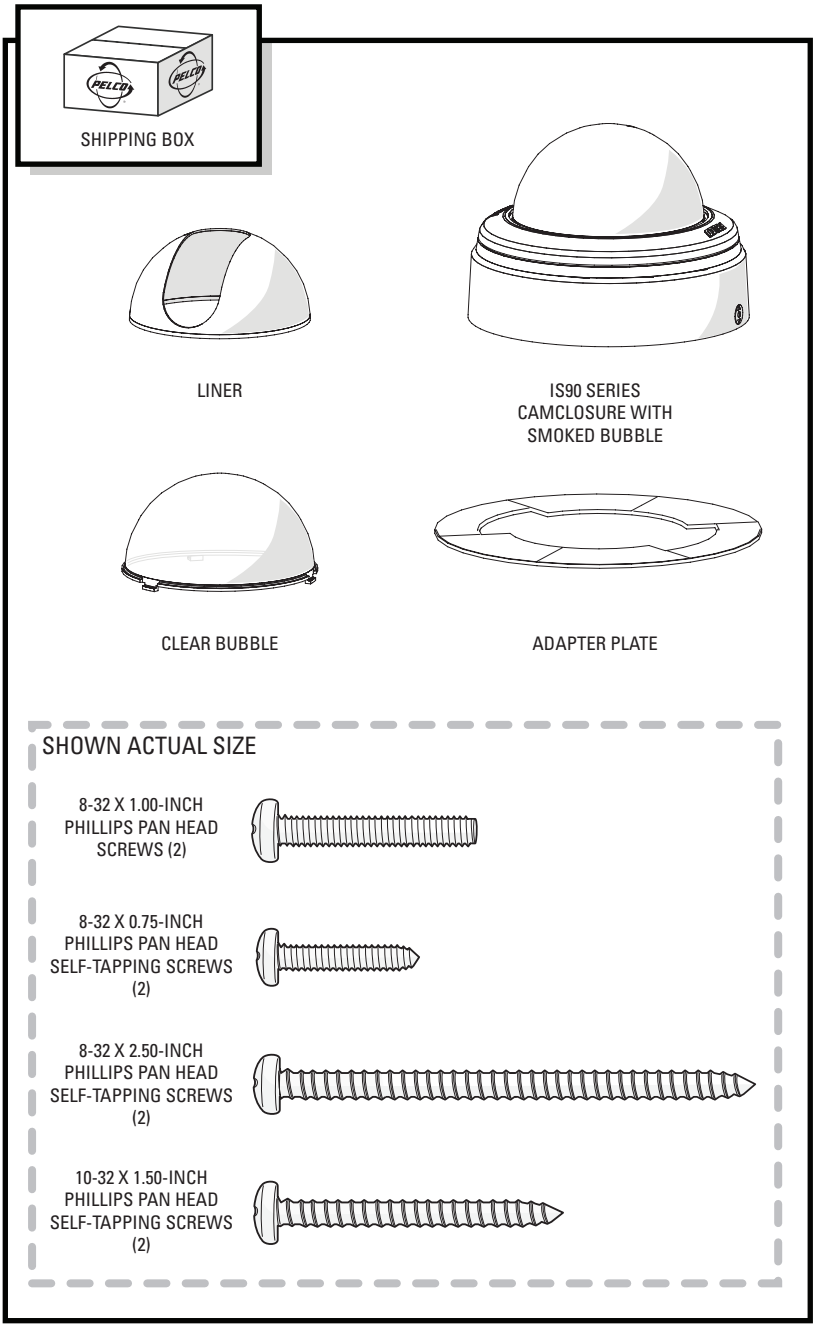


Figure 1. Package Components

Remove the Bubble

Turn the bubble counterclockwise and lift (refer to Figure 2). Place the bubble on a nonabrasive surface.

If the liner is already installed, remove it before installing the unit. To remove the liner, gently lift it from the unit. Place the liner to the side; it will be reinstalled later with the bubble (refer to *Install Liner and Bubble* on page 29).

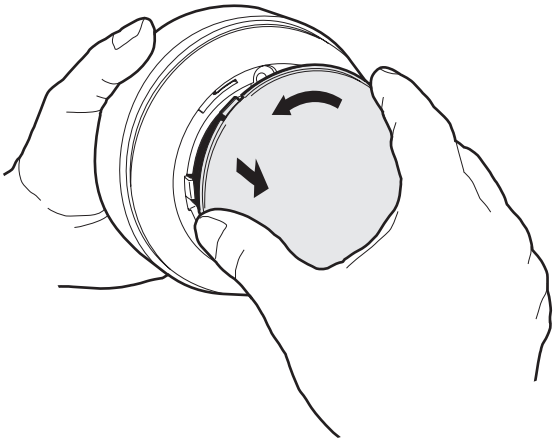


Figure 2. Removing the Bubble

Installation

You can install the IS90 Series Camclosure integrated camera system as follows:

- Mount to the surface of a ceiling/wall (refer to *Surface Installation: Ceiling/Wall* on page 10).
- Install in a suspended ceiling (refer to *In-Ceiling Installation: Suspended Ceiling* on page 12).
- Install in a fixed ceiling/wall (refer to *In-Ceiling Installation: Fixed Ceiling/Wall* on page 14).
- Mount to the surface of a 4S standard electrical box (refer to *Surface Installation: 4S Standard Electrical Box* on page 15).
- Install in a 4S deep electrical box (refer to *In-Ceiling Installation: 4S Deep Electrical Box* on page 16).

UNSHIELDED TWISTED PAIR (UTP) VIDEO

The IS90 Series offers support for unshielded twisted pair (UTP). The UTP video output signal is 1 Vp-p differential into a 100-ohm load. At a minimum, UTP requires Cat5, 100-ohm twisted pair cable.

SURFACE INSTALLATION: CEILING/WALL

1. Using the supplied template, mark the holes on the ceiling/wall for mounting the camera system and for installing the wiring, and then drill the holes (refer to Figure 3 and Figure 4 on page 11).
2. Pull the video and power wires through the ceiling/wall.
3. Connect the video cable and wires:
   - **BNC:** Connect the BNC connector from the unit to a mating BNC connector.
   - **UTP:** Connect the blue wire to Video +; connect the gray wire to Video -.
4. Connect the power wires (refer to Table A).

Table A. Power Input: Surface, Ceiling/Wall Installation

Voltage	Red Wire	Black Wire
12 VDC	+	Ground
24 VAC	~	~

AC operation only: If you are wiring more than one Camclosure to the same transformer, connect one side of the transformer to the red wire on all units; connect the other side of the transformer to the black wire on all units.

NOTE: Failure to connect all AC powered units the same way will cause the cameras to be out of phase with each other and may produce a vertical roll when switching between cameras.

5. For a non-concrete ceiling/wall, use 6-32 toggle bolts (not supplied) to attach the surface mount ring and back box to the mounting surface (refer to Figure 3 on page 11). For a concrete ceiling/wall, use 8-32 mounting hardware (not supplied; refer to Figure 4 on page 11).

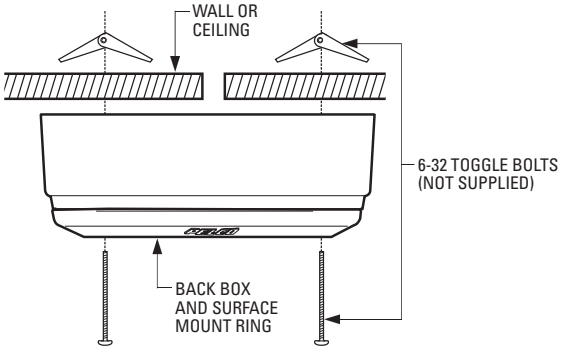


Figure 3. Ceiling/Wall Installation

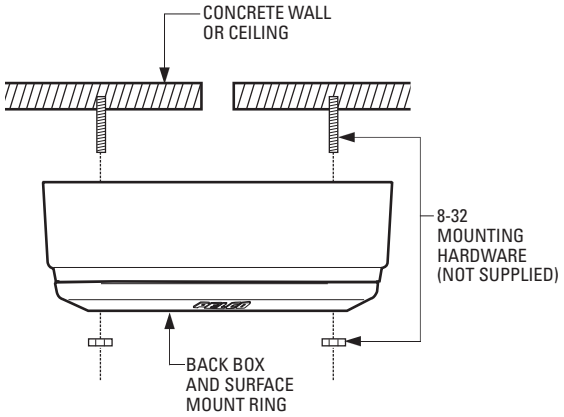


Figure 4. Concrete Ceiling/Wall Installation

IN-CEILING INSTALLATION: SUSPENDED CEILING

1. Remove the surface mount ring from the back box (refer to Figure 5):

   a. Place fingers on the circular marks located on the sides of the surface mount ring.

   b. Pinch the sides.

   c. Lift and remove the surface mount ring from the back box. Do not discard the surface mount ring, it is required to complete the installation.

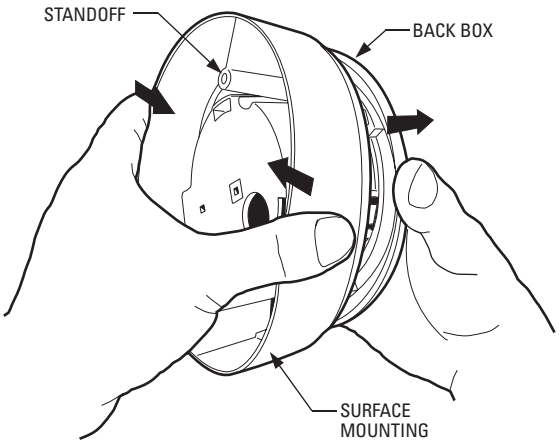


Figure 5. Removing the Surface Mount Ring from the Back Box

2. Pull the video and power wires to the selected ceiling tile.
3. Mount the unit to the ceiling tile (refer to Figure 6 and Figure 7):
    a. Remove the ceiling tile from the ceiling.
    b. Cut a hole 4 inches (10 cm) in diameter in the ceiling tile.
    c. Use one of the following mounting options:
        - To mount with the adapter plate, place the adapter plate on the inside of the ceiling tile (refer to Figure 6).

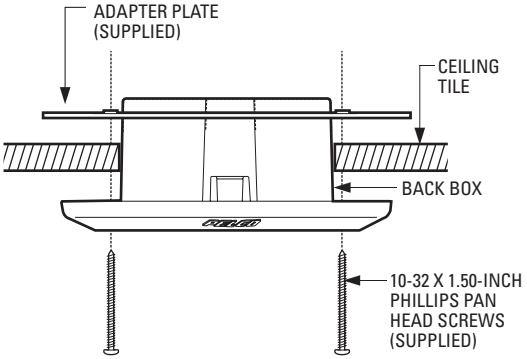


Figure 6. Ceiling Tile Installation with Adapter Plate

        - To mount with the surface mount ring, turn the ring upside down and place it on the inside of the ceiling tile (refer to Figure 7).

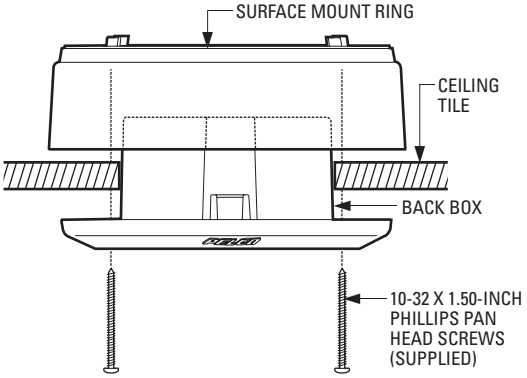


Figure 7. Ceiling Tile Installation with Surface Mount Ring

    d. Attach the back box to the ceiling tile and the adapter plate or surface mount ring with two 10-32 x 1.50-inch Phillips pan head self-tapping screws (supplied).
    e. Reinstall the ceiling tile with the unit.

4. Remove an adjacent ceiling tile to access the unit.
5. Connect the video cable and wires:
   - **BNC:** Connect the BNC connector from the unit to a mating BNC connector.
   - **UTP:** Connect the blue wire to Video +; connect the gray wire to Video -.
6. Connect the power wires (refer to Table B).

Table B. Power Input: In-Ceiling, Suspended Ceiling Installation

Voltage	Red Wire	Black Wire
12 VDC	+	Ground
24 VAC	~	~

AC operation only: If you are wiring more than one Camclosure to the same transformer, connect one side of the transformer to the red wire on all units; connect the other side of the transformer to the black wire on all units.

NOTE: Failure to connect all AC powered units the same way will cause the cameras to be out of phase with each other and may produce a vertical roll when switching between cameras.

7. Reinstall the adjacent ceiling tile.

IN-CEILING INSTALLATION: FIXED CEILING/WALL

1. Remove the surface mount ring from the back box (refer to Figure 5 on page 12):
   a. Place your fingers on the circular marks located on the sides of the surface mount ring.
   b. Pinch the sides.
   c. Lift and remove the surface mount ring from the back box. Do not discard the surface mount ring, it is required to complete the installation.
2. Cut a hole 4 inches (10 cm) in diameter in the ceiling/wall (refer to Figure 8 on page 15).
3. Pull the video and power wires through the opening.
4. Connect the video cable and wires:
   - **BNC:** Connect the BNC connector from the unit to a mating BNC connector.
   - **UTP:** Connect the blue wire to Video +; connect the gray wire to Video -.
5. Connect the power wires (refer to Table C).

Table C. Power Input: In-Ceiling, Fixed Ceiling/Wall Installation

Voltage	Red Wire	Black Wire
12 VDC	+	Ground
24 VAC	~	~

AC operation only: If you are wiring more than one Camclosure to the same transformer, connect one side of the transformer to the red wire on all units; connect the other side of the transformer to the black wire on all units.

NOTE: Failure to connect all AC powered units the same way will cause the cameras to be out of phase with each other and may produce a vertical roll when switching between cameras.

6. Attach the back box to the mounting surface:
   - If you have access behind the ceiling/wall (refer to Figure 6 on page 13):
     (1) Place the adapter plate on the inside of the ceiling/wall.
     (2) Attach the back box to the ceiling/wall with two 10-32 x 1.50-inch Phillips pan head self-tapping screws (supplied).
   - If you do not have access behind the ceiling/wall access, use 3-16 toggle bolts (not supplied; refer to Figure 8).

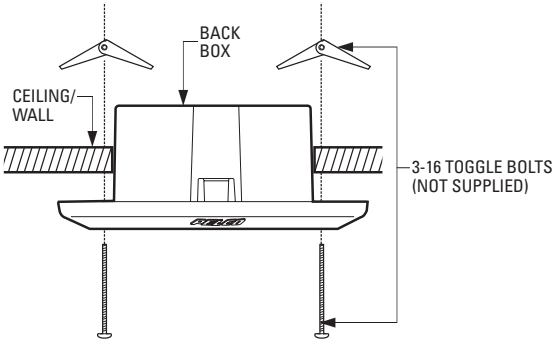


Figure 8. In-Ceiling Installation to a Fixed Ceiling/Wall

SURFACE INSTALLATION: 4S STANDARD ELECTRICAL BOX

1. Attach the adapter plate (supplied) to the 4S box with two 8-32 x 1.00-inch Phillips pan head screws (supplied; refer to Figure 9 on page 16).
2. Pull the video and power wires through the adapter plate.
3. Connect the video cable and wires:
   - **BNC:** Connect the BNC connector from the unit to a mating BNC connector.
   - **UTP:** Connect the blue wire to Video +; connect the gray wire to Video -.
4. Connect the power wires (refer to Table D).

Table D. Power Input: Surface, 4S Standard Electrical Box Installation

Voltage	Red Wire	Black Wire
12 VDC	+	Ground
24 VAC	~	~

AC operation only: If you are wiring more than one Camclosure to the same transformer, connect one side of the transformer to the red wire on all units; connect the other side of the transformer to the black wire on all units.

NOTE: Failure to connect all AC powered units the same way will cause the cameras to be out of phase with each other and may produce a vertical roll when switching between cameras.

5. Attach the surface mount ring and back box to the adapter plate with two 8-32 x 2.50-inch Phillips pan head self-tapping screws (supplied).

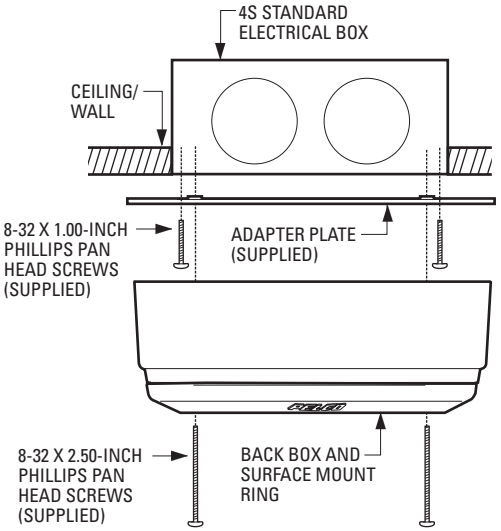


Figure 9. 4S Standard Electrical Box Installation

IN-CEILING INSTALLATION: 4S DEEP ELECTRICAL BOX

1. Remove the surface mount ring from the back box (refer to Figure 5 on page 12):
   a. Place your fingers on the circular marks located on the sides of the surface mount ring.
   b. Pinch the sides.
   c. Lift and remove the surface mount ring from the back box. The ring is not required to complete the installation.
2. Attach the adapter plate (supplied) to the 4S box with two 8-32 x 1.00-inch Phillips pan head screws (supplied; refer to Figure 10 on page 17).
3. Pull the video and power wires through the adapter plate.
4. Connect the video cable and wires:
   - **BNC:** Connect the BNC connector from the unit to a mating BNC connector.
   - **UTP:** Connect the blue wire to Video +; connect the gray wire to Video -.
5. Connect the power wires (refer to Table E).

Table E. Power Input: In-Ceiling, 4S Deep Electrical Box Installation

Voltage	Red Wire	Black Wire
12 VDC	+	Ground
24 VAC	~	~

AC operation only: If you are wiring more than one Camclosure to the same transformer, connect one side of the transformer to the red wire on all units; connect the other side of the transformer to the black wire on all units.

NOTE: Failure to connect all AC powered units the same way will cause the cameras to be out of phase with each other and may produce a vertical roll when switching between cameras.

6. Attach the back box to the adapter plate with two 8-32 x 0.75-inch Phillips pan head self-tapping screws (supplied).

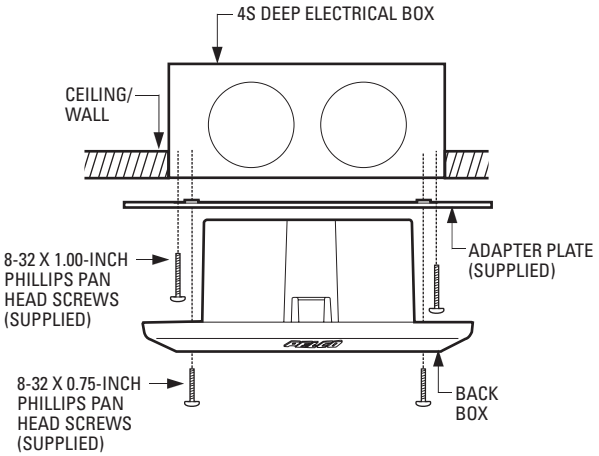


Figure 10. 4S Deep Electrical Box Installation

Camera Adjustments

To perform the following camera adjustments, connect a monitor. Then turn on power to the camera and monitor. To use the service connector, refer to *Service Connector* on page 30.

To set the DIP switches or to adjust the auto iris level (DN, CH, or C) or the vertical phase (DW or CW), you will need a miniature trimpot adjustment tool with a 0.05-inch (1.27 mm) blade. Suggested tools include a miniature flat-tip screwdriver, a Philmore trimpot tool (#63-8608), and the Philmore 10-piece tool set (#63-910). To adjust the lens, you may also need a miniature Phillips screwdriver.

After you have adjusted the unit, install the bubble and liner (if necessary).

VARIFOCAL LENS ZOOM AND FOCUS ADJUSTMENTS

NOTE: You will need a miniature Phillips or flat-tip screwdriver to loosen and tighten the locking screws.

To adjust the field of view:

1. Loosen the zoom locking screw (refer to Figure 11).
2. Turn the zoom adjustment ring clockwise or counterclockwise to select the field of view.
3. Tighten the zoom locking screw.

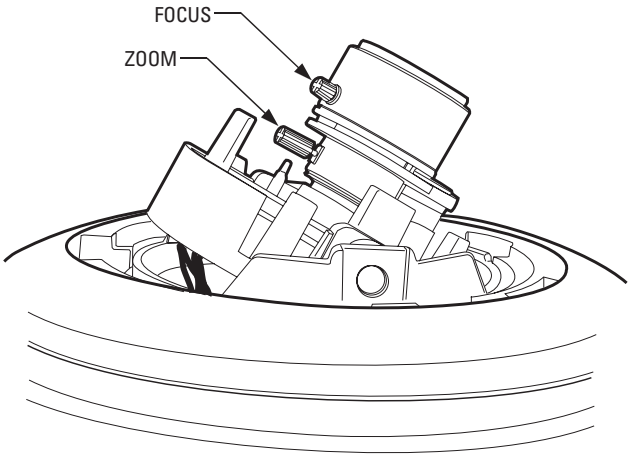


Figure 11. Location of Zoom and Focus Locking Screws

To adjust the focus:

1. Loosen the focus locking screw.
2. Position the inverted dome approximately 0.125 inch (3.175 mm) from the front of the lens. Make sure that the lens and the dome are centered (refer to Figure 12).
3. Turn the focus locking screw clockwise or counterclockwise to adjust the focus.
4. When the optimal focus is reached, tighten the focus locking screw

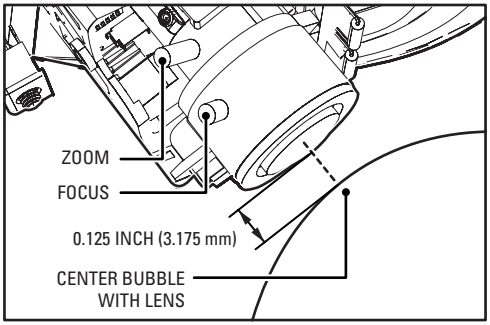


Figure 12. Adjusting the Focus

DN/CH/C SERIES ADJUSTMENTS

Refer to Figure 13 to adjust the IS90-DN, IS90-CH, or IS90-C model.

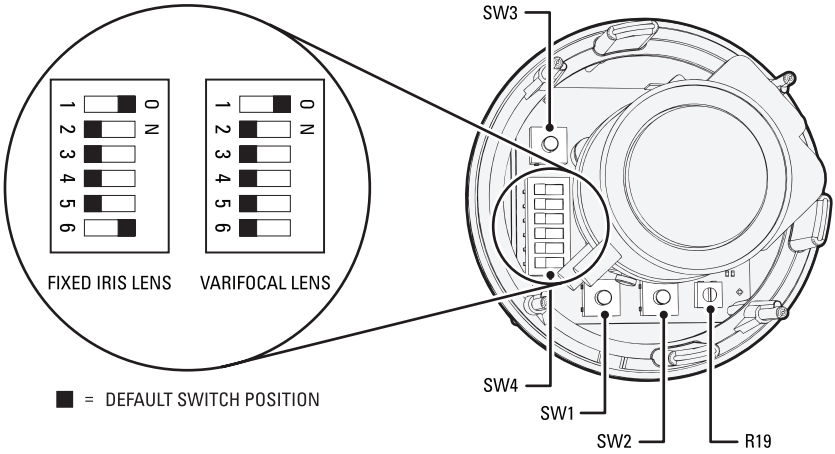


Figure 13. Adjusting the IS90-DN/CH/C Series Camclosure

SWITCH SETTINGS

Locate the DIP switch. Then set the switches for your installation.

SW4-1: Auto Gain Control

The automatic gain control (AGC) adjusts the image automatically to compensate for changes in light levels.

Set SW4-1 to ON to enable AGC. Set it to OFF to disable AGC. The default is ON.

SW4-2: Backlight Compensation

The backlight compensation (BLC) feature compensates for backlit scenes by enhancing objects in the center of the scene.

Set SW4-2 to ON to enable BLC. Use this setting if a bright backlight is present and the subject in the center of the picture appears dark or as a silhouette.

Set it to OFF to disable backlight compensation. This is the default.

SW4-3: Line Sync

When multiple cameras are connected to the same switching device, vertical roll may occur on the monitor. AC line lock eliminates vertical roll by locking the frame rate to the power supply frequency. Each camera output is synchronized to the power supply frequency (refer to *Vertical Phase Adjustment* on page 21 for more information.)

Internal line sync disables line lock and synchronizes cameras internally.

Set SW4-3 to OFF to use AC line lock.

Set it to ON to use internal line sync. The default is OFF.

SW4-4: Flickerless

In certain lighting conditions, a flicker in the light source may affect camera operation. Flickering can be caused by a number of conditions, including the quality of the source power and the age and type of fluorescent bulbs and ballasts.

Set SW4-4 to ON to enable flickerless operation. The camera will remove the effects of flickering when present. The shutter speed will be set to 1/120 (NTSC) or 1/100 (PAL).

Set it to OFF to disable flickerless operation. This is the default.

NOTE: If you enable flickerless operation, you should use AC line lock for best results.

SW4-5: Auto White Balance/Manual White Balance

Auto white balance (AWB) is enabled by default (OFF).

To manually set and lock the white balance:

1. Set SW4-5 to OFF.
2. Hold a white background in front of the lens until the video shows all white.
3. While holding the background in place, set SW4-5 to ON. A blue blinking block appears on the video image for a few seconds. When the block changes to solid green, the manual white balance (MWB) process is complete.

SW4-6: Reserved

Do not change SW4-6 from its factory setting. SW4-6 must be set to OFF for varifocal models; it must be set to ON for fixed-iris lenses.

AUTO IRIS LEVEL ADJUSTMENT

To adjust the auto iris DC drive level (refer to Figure 13 on page 20):

1. Tilt or rotate the camera module until you can access the auto iris level control (R19).
2. Turn the screw clockwise to increase the brightness level or counterclockwise to decrease the brightness level.

VERTICAL PHASE ADJUSTMENT

Use this procedure for 24 VAC operation only.

When using more than one camera power supply, a brief vertical roll may occur on the monitor when switching from one camera to another. To eliminate vertical roll, reverse the 24 VAC connections on one camera. If both cameras are connected to the same transformer, this should solve the problem. If the problem persists, adjust the phase control by synchronizing, or line-locking, the cameras to one another.

NOTE: When adjusting vertical phase, line sync (SW4-3) must be set to OFF for AC line lock.

Adjusting Vertical Phase

You may need two people when synchronizing the cameras: one person at the camera and the other at the monitor to observe the vertical roll and the effect of any camera adjustments.

To synchronize the cameras:

1. Choose a reference camera to which all other cameras will be phased.
2. Select the camera to synchronize. Use buttons SW1 and SW2 to synchronize the camera to the reference camera (refer to Figure 13 on page 20). SW1 increases vertical phase; SW2 decreases vertical phase.

3. Each time an adjustment is made, switch back and forth between the camera you are adjusting and the reference camera. Repeat this process as many times as necessary until the roll between the cameras is no longer noticeable.
4. Adjust the phase of all other cameras by repeating steps 2 through 3. Always adjust to the reference camera selected in step 1.

NOTE: The preferred method for camera phase adjustment is to use a dual trace oscilloscope to align the vertical sync pulses of the reference camera to the selected camera(s).

BLEMISH DETECTION

If small white or color spots appear in the video image, one or more pixels on the camera imager may be defective. (This condition is common for both CCD and CMOS imagers.)

DN, CH, and C Series cameras with auto iris lenses automatically detect and correct defective pixels during startup. Video turns on, then off, and then on again. If white or color spots still appear, you can correct the defective pixels manually.

CH and C Series cameras with fixed iris lenses do not automatically detect and correct defective pixels. You can correct the defective pixels manually.

To manually correct defective pixels (refer to Figure 13 on page 20):

1. Cover the lens completely. Make sure no light can enter the lens.

   NOTE: The mechanical iris lens aperture does not completely block the light.
2. Press and hold button SW3 for one second. The camera will find and correct defective pixels.

   NOTE: Any defective pixels that cannot be completely corrected may still appear.
3. Release button SW3.
4. Uncover the lens for normal camera operation.

DAY/NIGHT OPERATION

NOTE: This section only applies to DN model cameras.

DN model cameras regularly check the brightness level of the field of view to determine when to switch between day (color) and night (black-white) operation.

Actual brightness threshold levels are affected by camera angle, amount of zoom, field of view, lens, and type of lighting. The switching process lasts from seven to 10 seconds.

Figure 14 and Table F show how the camera switches between color and black-white operation.

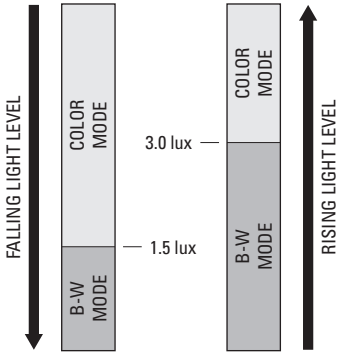


Figure 14. Threshold Switching Levels

Table F. DN/CH/C Series Approximate Switching Thresholds

Color to B-W	1.5 lux ±1.0 lux
B-W to Color	3.0 lux ±1.0 lux

NOTE: These switching thresholds are approximate. Use the thresholds in Table F as a guide when installing the unit.

DW/CW SERIES (WIDE DYNAMIC RANGE) ADJUSTMENTS

Refer to Figure 15 to adjust the IS90-DW or IS90-CW model.

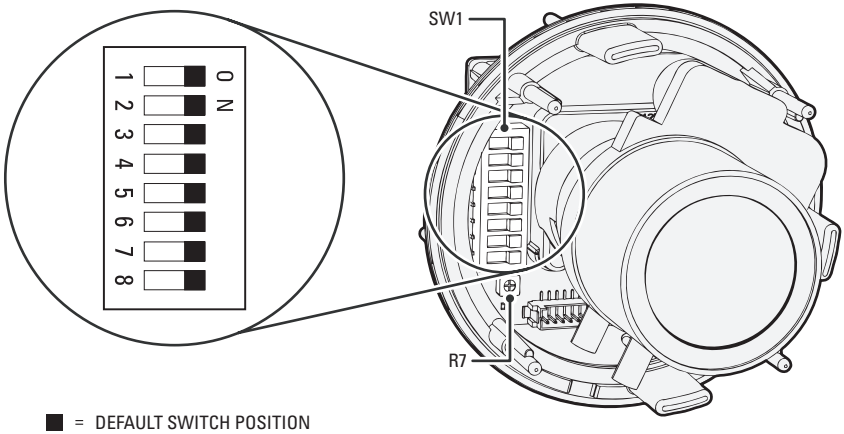


Figure 15. Adjusting the IS90-DW/CW Series Camclosure

SWITCH SETTINGS

Locate the DIP switch. Then set the switches for your installation.

SW1-1: Video Format

Set SW1-1 to ON for NTSC. Set it to OFF for PAL. The default is ON.

SW1-2: Line Sync

When multiple cameras are connected to the same switching device, vertical roll may occur on the monitor. AC line lock eliminates vertical roll by locking the frame rate to the power supply frequency. Each camera output is synchronized to the power supply frequency (refer to *Vertical Phase Adjustment* on page 27 for more information.)

Internal line sync disables line lock and synchronizes cameras internally.

Set SW1-2 to ON to use AC line lock. Set it to OFF to use internal line sync. The default is ON.

SW1-3: Interlaced Scanning/Progressive Scanning

Interlaced scanning is the standard for analog recording installations. Each frame contains one odd and one even field, each processed separately.

Progressive scanning is better for digital recording installations. Each frame is processed as a whole, which results in less blurring and cleaner digital conversion. It also saves storage space on digital video recorders.

Set SW1-3 to ON to select interlaced scanning. Set it to OFF to select progressive scanning. The default is ON.

SW1-4: Auto White Balance/Manual White Balance

Auto white balance (AWB) is enabled by default (ON).

To manually set and lock the white balance:

1. Set SW1-4 to ON.
2. Hold a white background in front of the lens until the video shows all white.
3. While holding the background in place, set SW1-4 to OFF. A green block and a white block alternate briefly on the video image until the manual white balance (MWB) process is complete.

SW1-5: Fluorescent/General

Enable this option to adjust the camera for best operation under fluorescent lighting.

Set SW1-5 to OFF for fluorescent lighting. Set it to ON for general lighting. The default is ON.

NOTE: If you use fluorescent operation, you should use AC line lock for best results.

SW1-6: General/Maximum Wide Dynamic Range

Maximum wide dynamic range (WDR) supports about 36 dB of additional dynamic range over a standard camera. Use it for installations that require the maximum WDR.

General WDR supports about 20 dB of additional dynamic range over a standard camera. Use it for installations that do not require the maximum WDR.

Set SW1-6 to ON to select maximum WDR. Set it to OFF to select general WDR. The default is ON.

SW1-7: Digital Slow Shutter

The default shutter speed for NTSC is 30 frames per second (fps). It is 25 fps for PAL. This is also known as SENS 2X.

You can decrease the shutter speed to 7.5 fps (NTSC) or 6.25 fps (PAL). This is known as SENS 8X, which improves low light sensitivity.

Set SW1-7 to ON to select SENS 2X. Set it to OFF to select SENS 8X. The default is ON.

SW1-8: Day/Night Operation (DW models only)

NOTE: On CW models, SW1-8 is unused and does not affect camera operation.

DW model cameras regularly check the brightness level of the field of view to determine when to switch between day (color) and night (black-white) operation. Use SW1-8 to set the general light levels at which the camera will automatically switch.

Set SW1-8 to ON (dark) to use standard thresholds to switch between color and black-white operation. This is the default.

Set it to OFF (dusk) to use higher light thresholds to switch between color and black-white operation.

Actual brightness threshold levels are affected by camera angle, amount of zoom, field of view, lens, and type of lighting. The switching process lasts from seven to 10 seconds.

NOTE: If the camera switches between day/night mode at least three consecutive times within a short time period, the camera will remain in the last mode for 10-minutes. To override this 10-minute pause, cycle the power or expose the camera to an extreme light level change (for example, from very dim light to very bright light).

Figure 16 and Table G show how the camera switches between color and black-white operation for each setting.

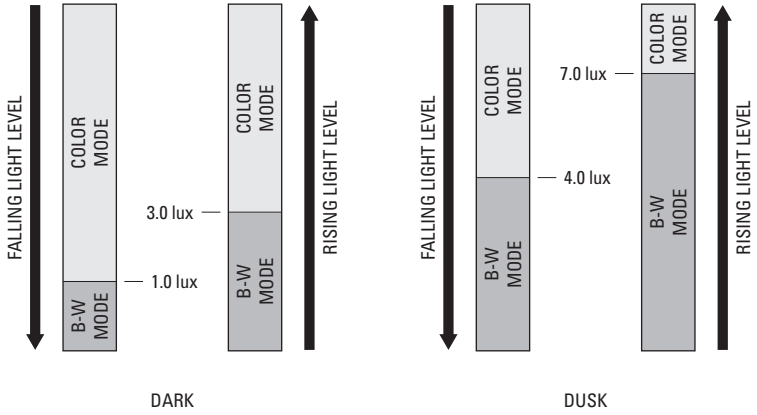


Figure 16. Threshold Switching Levels

Table G. DW/CW Series Approximate Switching Thresholds

	Dark (ON)	Dusk (OFF)
Color to B-W	1.0 lux	4.0 lux
B-W to Color	3.0 lux	7.0 lux

NOTE: These switching thresholds are approximate and were measured using a 3.0 to 9.5 mm lens at f/1.0. Use the thresholds in Table G as a guide when installing the unit.

AUTO IRIS LEVEL ADJUSTMENT

The electronics of the IS90-DW and IS90-CW Series Camclosures automatically adjust the camera to the auto iris. Auto iris level adjustments are not necessary.

VERTICAL PHASE ADJUSTMENT

Use this procedure for 24 VAC operation only.

When using more than one camera power supply, a brief vertical roll may occur on the monitor when switching from one camera to another. To eliminate vertical roll, reverse the 24 VAC connections on one camera. If both cameras are connected to the same transformer, this should solve the problem. If the problem persists, adjust the phase control by synchronizing, or line-locking, the cameras to one another.

NOTE: When adjusting vertical phase, line sync (SW1-2) must be set to ON for AC line lock.

Adjusting Vertical Phase

You may need two people when synchronizing the cameras: one person at the camera and the other at the monitor to observe the vertical roll and the effect of any camera adjustments.

To synchronize the cameras:

1. Choose a reference camera to which all other cameras will be phased.
2. Select the camera to synchronize. Use the phase adjustment control (R7) to synchronize the camera to the reference camera (refer to Figure 15 on page 24). Turn R7 clockwise to increase vertical phase; turn R7 counterclockwise to decrease vertical phase.
3. Each time an adjustment is made, switch back and forth between the camera you are adjusting and the reference camera. Repeat this process as many times as necessary until the roll between the cameras is no longer noticeable.
4. Adjust the phase of all other cameras by repeating steps 2 through 3. Always adjust to the reference camera selected in step 1.

NOTE: The preferred method for camera phase adjustment is to use a dual trace oscilloscope to align the vertical sync pulses of the reference camera to the selected camera(s).

BLEMISH DETECTION

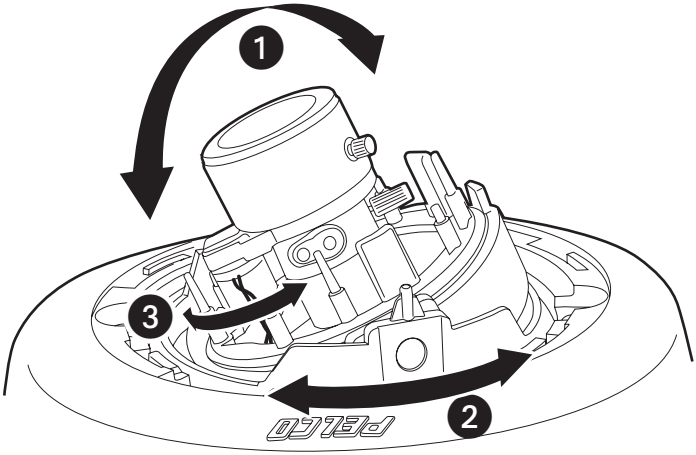
If small white or color spots appear in the video image, one or more pixels on the camera imager may be defective. (This condition is common for both CCD and CMOS imagers.)

DW and CW Series cameras have auto iris lenses and automatically detect and correct defective pixels during startup. Manual pixel correction is not available.

Camera Positioning

Rotate and tilt the camera module to position the camera.

NOTE: Do not over-rotate the module. Excessively turning the module in one direction could result in damage to the wiring.



1 Tilt 140° (20° to 160°) 2 Pan 360° 3 Rotation 360°

Figure 17. Positioning the Camera

Install Liner and Bubble

1. To install the liner with a clear bubble (refer to Figure 18):
   a. Align the studs located on the camera module with the clips on the liner.
   b. Lightly pinch the sides of the liner, opposite from the clips, and place the clips over the studs.
   c. When the liner is secure, position the viewing window of the liner over the lens of the camera.

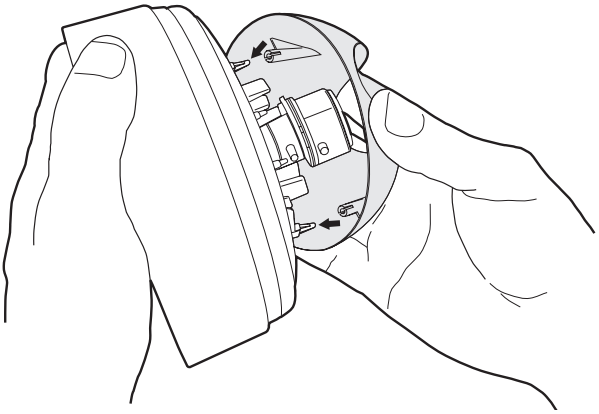


Figure 18. Installing the Liner

2. Install the bubble (refer to Figure 19):
   a. Select the clear bubble or the smoked bubble.
   b. Align the standoffs of the selected bubble with the slots on the back box.
   c. Turn the bubble clockwise until it locks into place.

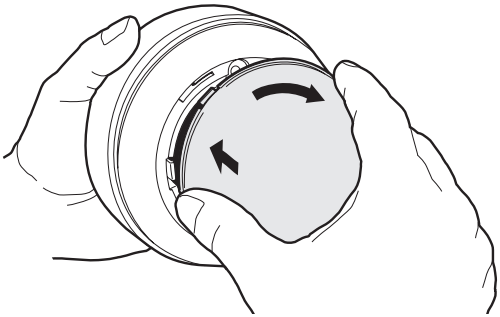


Figure 19. Installing the Bubble

Service Connector

The IS90 Series Camclosure integrated camera system includes a service connector that outputs camera video. Use it at the installation site to set up the field of view and to focus the camera.

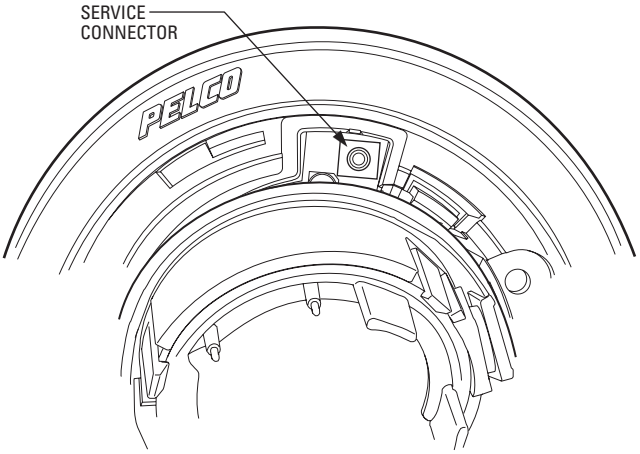


Figure 20. Service Connector

Pelco offers two optional items (CST150 and ICS-SC) that plug directly into the service connector. Before using either option, you must loosen the tamper-resistant screws to remove the trim ring from the back box. Use a 1/8-inch hollow screwdriver bit (not supplied).

The optional CST150 has a 3-foot (0.9 m) cable and microdisplay for viewing camera video. Plug it into the service connector and view the video.

NOTE: The three buttons on the CST150 are not used with the IS90 Series Camclosure.

The optional IS-SC is a 4-foot (1.2 m) cable with a service connector and a BNC connector. Plug the service connector into the unit. Then connect the other end to any standard BNC (VIDEO IN) connector on a monitor.

To assemble a longer service cable for the Camclosure integrated camera system, purchase the following items from a local electronics supply store:

Qty	Description
1	2.5 mm monaural headphone plug
1	CPM 88 miniature coaxial connector
1	RG174/U coaxial cable

To assemble the cable:

1. Attach the CPM 88 miniature coaxial connector to one end of the cable. Follow the directions supplied with the miniature coaxial connector.
2. Attach the 2.5 mm monaural plug to the other end of the coaxial cable (refer to Figure 21):
    a. Remove the support sleeve from the plug.
    b. Slip the support sleeve over the end of the cable.
    c. Prepare the cable.
    d. Solder the center connector of the cable to the center pin of the plug.
    e. Thread the braid of the cable through the hole in the crimp pin.
    f. Solder the braid to the top of the crimp pin.
    g. Crimp the end of the crimp pin around the cable.
    h. Reassemble the support sleeve and the plug.

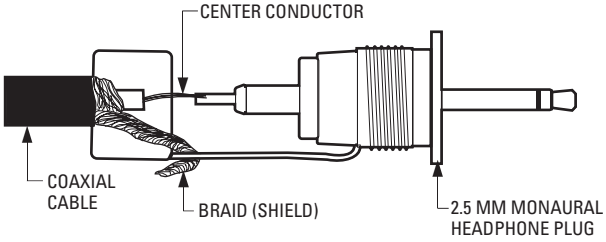


Figure 21. Attaching the 2.5 mm Monaural Headphone Plug

Specifications

GENERAL

Pan/Tilt Adjustment	Manual
Pan	360°
Tilt	140° (20° to 160° range)
Rotation	360°
Construction	
Back Box and Surface Mount Ring	ABS plastic
Bubble	Polycarbonate
Finish	White or black
Light Attenuation	
Smoked	f/1.5 light loss
Clear	Zero light loss
Environment	Indoor
Operating Temperature	32° to 120°F (0° to 49°C)
Unit Weight	0.52 lb (0.24 kg)

ELECTRICAL

Input Voltage*	12 VDC or 24 VAC (±10%), autosensing
Synchronization	Internal or AC line lock
Power Consumption	<3 W (DW/CW models) <4 W (DN/CH/C models)

*24 VAC power is recommended when installing any Camclosure integrated camera system under fluorescent lighting conditions.

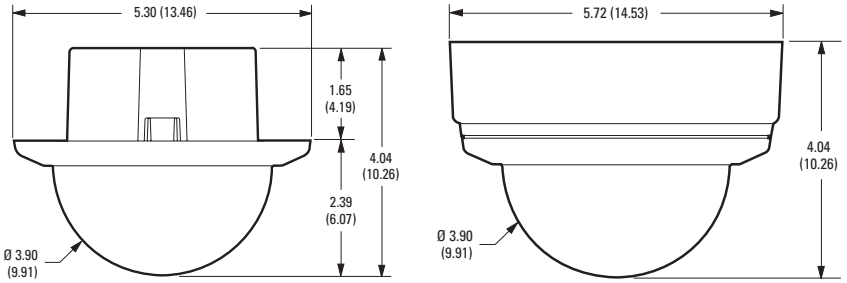
VIDEO

Signal System	NTSC or PAL
Video Output	
Composite	1 Vp-p (75 ohms)
UTP	1 Vp-p (100 ohms)
Video Connectors	1 composite BNC and 1 UTP
Service Connector	3-conductor, 2.5 mm connector for video output to optional IS-SC cable

CAMERA/LENS

If you need technical specifications for the camera itself, refer to the IS90 specification online at *www.pelco.com*.

(Design and product specifications subject to change without notice.)



NOTE: VALUES IN PARENTHESES ARE CENTIMETERS; ALL OTHERS ARE INCHES.

REVISION HISTORY

Manual #	Date	Comments
C3425M	2/07	Original version.
C3425M-A	5/07	Updated switch setting and day/night operation descriptions.
C3425M-B	7/07	Changed part name of service connector from ICS-SC to IS-SC per CN20476. Revised step 1 for a surface installation.
C3425M-C	10/07	Revised illustrations for threshold switching levels.
C3425M-D	8/08	Removed standard resolution models.
C3425M-E	1/09	Added a lens focus procedure in *Camera Adjustments*.

PRODUCT WARRANTY AND RETURN INFORMATION

WARRANTY

Pelco will repair or replace, without charge, any merchandise proved defective in material or workmanship **for a period of one year** after the date of shipment.

Exceptions to this warranty are as noted below:

- Five years:
  - Fiber optic products
  - TW3000 Series unshielded twisted pair (UTP) transmission products
  - CC3701H-2, CC3701H-2X, CC3751H-2, CC3651H-2X, MC3651H-2, and MC3651H-2X camera models
- Three years:
  - Pelco-branded fixed camera models (CCC1390H Series, C10DN Series, C10CH Series, and IP3701H Series)
  - EH1500 Series enclosures
  - Spectra® IV products (including Spectra IV IP)
  - Camclosure® Series (IS, ICS, IP) integrated camera systems
  - DX Series digital video recorders, DVR5100 Series digital video recorders, Digital Sentry® Series hardware products, DVX Series digital video recorders, and NVR300 Series network video recorders
  - Endura® Series distributed network-based video products
  - Genex® Series products (multiplexers, server, and keyboard)
  - PMCL200/300/400 Series LCD monitors
- Two years:
  - Standard varifocal, fixed focal, and motorized zoom lenses.
  - DF5/DF8 Series fixed dome products
  - Legacy® Series integrated positioning systems
  - Spectra III™, Spectra Mini, Spectra Mini IP, Esprit®, ExSite®, and PS20 scanners, including when used in continuous motion applications.
  - Esprit Ti and TI2500 Series thermal imaging products
  - Esprit and WW5700 Series window wiper (excluding wiper blades).
  - CM6700/CM6800/CM9700 Series matrix
  - Digital Light Processing (DLP®) displays (except lamp and color wheel). The lamp and color wheel will be covered for a period of 90 days. The air filter is not covered under warranty.
  - Intelli-M® eIDC controllers
- One year:
  - Video cassette recorders (VCRs), except video heads. Video heads will be covered for a period of six months.
- Six months:
  - All pan and tilts, scanners, or preset lenses used in continuous motion applications (preset scan, tour, and auto scan modes).

Pelco will warrant all replacement parts and repairs for 90 days from the date of Pelco shipment. All goods requiring warranty repair shall be sent freight prepaid to a Pelco designated location. Repairs made necessary by reason of misuse, alteration, normal wear, or accident are not covered under this warranty.

Pelco assumes no risk and shall be subject to no liability for damages or loss resulting from the specific use or application made of the Products. Pelco's liability for any claim, whether based on breach of contract, negligence, infringement of any rights of any party or product liability, relating to the Products shall not exceed the price paid by the Dealer to Pelco for such Products. In no event will Pelco be liable for any special, incidental, or consequential damages (including loss of use, loss of profit, and claims of third parties) however caused, whether by the negligence of Pelco or otherwise.

The above warranty provides the Dealer with specific legal rights. The Dealer may also have additional rights, which are subject to variation from state to state.

If a warranty repair is required, the Dealer must contact Pelco at (800) 289-9100 or (559) 292-1981 to obtain a Repair Authorization number (RA), and provide the following information:

1. Model and serial number
2. Date of shipment, P.O. number, sales order number, or Pelco invoice number
3. Details of the defect or problem

If there is a dispute regarding the warranty of a product that does not fall under the warranty conditions stated above, please include a written explanation with the product when returned.

Method of return shipment shall be the same or equal to the method by which the item was received by Pelco.

RETURNS

To expedite parts returned for repair or credit, please call Pelco at (800) 289-9100 or (559) 292-1981 to obtain an authorization number (CA number if returned for credit, and RA number if returned for repair) and designated return location.

All merchandise returned for credit may be subject to a 20 percent restocking and refurbishing charge.

Goods returned for repair or credit should be clearly identified with the assigned CA or RA number and freight should be prepaid

12-23-08

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